474 According to this table, the per shih-mou
433 (1/6 acre) yeild of the Chang Lai-sheng Agricultural Producers' Co-operative was 12 per cent higher than that of the Ting Ta-sheng Mutual-aid Team and 15 per cent higher than that of the Ting Yin-sheng farm in Ya-t'ien hsiang, Wu-chin hsien, Shantung Province, the output of Sung Tsung-kuo Agricultural Producers" Co-operative per shih-mou was 21 per cent over that of Sung I-pin's Mutual-Aid Team and 47 per cent over that of the Sung Pao-jen farm. The average per shih-mou output of cotton of the 3 year-round mutual aid teams of Chu-chai hsiang, Shanghai, was about 10 per cent higher than that of 2 temporary mutual-aid teams and 50 per cent higher than the average of 14 individual farms.

IV. AGRICULTURAL PRODUCTION OF EAST CHINA

241 The agricultural production of East China includes grains, raw cotton, oil-bearing crops, silk, tea, ramie, hemp, tobacco, and fish. Other agricultural products which bear little significance are not included in the present discussion.

A. Grain Production

241
433 East China produced 23.8 per cent of the country's grains, with rice heading the list, constituting about 45.4 per cent of the total grain production[16] in 1953. Wheat came next, representing 13.5 per cent of the total output in the same year

16. Ching-chi Tao-pao [Economic Bulletin], Hong Kong, March 10, 1953, No. 309, p. 12.

1: Stanford U. S-4, 5 1956 AF15 East China AF15

14 In terms of acreage of grain crops, wheat led by
433 117.87 million shih-mou (19.65 million acres) in 1946, rice ranked second by 92.82 million shih-mou (15.47 million acres). Table 6 shows the acreage of different major grain crops of 1946 by provinces in East China, with equivalent acres in parentheses.

In analyzing Table 6, the acreage of other crops had little significance. In terms of production, according to a Communist report, East China showed considerable growth during the five-year period, 1950-54, under Communist rule. The production data of different grains by years are shown in shih-piculs, with eqivalent tons in parentheses below.

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Table 6. Acreage of Grain Crops, 1946*
(S = Shih-mou.)
(Unit: Million. A = Acres.)

Province	Rice	Wheat	Barley	Oats	Corn	Kaoliang	Millet	Sweet Potatoes	Others#	Total
Kiangsu	34.22S (5.70A)	26.19S (4.37A)	10.81S (1.80A)	3.80S (0.63A)	1.69S (0.28A)	1.35S (0.22A)	1.18S (0.20A)	0.85S (0.14A)	8.20S (1.37A)	88.19S (14.71A)
Chekiang	28.75S (4.79A)	13.37S (2.23A)	7.13S (1.19A)	-----	1.14S (0.19A)	0.17S (0.03A)	0.27S (0.04A)	2.30S (0.38A)	4.07S (0.68A)	57.20S (9.53A)
Anhwei	15.05S (2.51A)	16.89S (2.81A)	4.39S (0.73A)	0.15S (0.02A)	1.26S (0.21A)	4.49S (0.75A)	0.53S (0.09A)	2.65S (0.43A)	2.85S (0.47A)	48.17S (8.03A)
Shantung	1.15S (0.19A)	52.83S (8.80A)	2.65S (0.44A)	0.58S (0.10A)	8.57S (1.43A)	16.32S (2.72A)	19.68S (3.28A)	3.57S (0.60A)	2.95S (0.49A)	108.30S (18.05A)
Fukien	13.65S (2.28A)	8.59S (1.43A)	2.66S (0.44A)	-----	0.02S (0.003A)	0.02S (0.003A)	0.20S (0.03A)	3.40S (0.56A)	1.05S (0.17A)	29.59S (4.93A)
Total	92.82S (15.46A)	117.87S (19.65A)	27.64S (4.61A)	4.53S (0.75A)	12.68S (2.11A)	22.35S (3.72A)	21.86S (3.61A)	12.68S (2.11A)	19.12S (3.18A)	331.55S (55.25A)

* Statistical Yearbook of China, 1948, pp. 73-74.

Including broad beans and peas.

(Table 6 faces p. 752)

(Table 6 faces p. 752) [a]

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Table 7. Grain Production by Years

(Unit: Million. S = Shih piculs. T = Tons.)

Grains	1931-1937 Average*	1949#	1951§	1952▽	1953※	1954☆	1955§
Rice	303.08S (16.67T)	216.10S (11.89T)	280.93S (15.45T)	353.44S (19.44T)	360.46S (19.82T)	366.30S (20.15T)	385.71S (21.21T)
Wheat	174.68S (9.61T)	64.26S (3.53T)	83.54S (4.59T)	105.10S (5.78T)	107.19S (5.89T)	108.92S (5.99T)	114.69S (6.31T)
Soyabeans	66.80S (3.67T)	33.32S (1.83T)	43.32S (2.38T)	54.49S (3.00T)	55.57S (3.06T)	56.48S (3.10T)	59.47S (3.27T)
Tubers	138.00S (7.59T)	49.96S (2.75T)	64.97S (3.57T)	81.74S (4.49T)	83.37S (4.58T)	84.71S (4.66T)	89.21S (4.91T)
Others**	223.78S (12.31T)	112.34S (6.18T)	146.04S (8.03T)	183.73S (10.10T)	187.38S (10.31T)	190.41S (10.47T)	200.50S (11.03T)
Total	906.34S (49.85T)	476.00S (26.18T)	618.80S (34.02T)	778.50S (42.81T)	793.97S (43.66T)	806.82S (44.37T)	849.58S (46.73T)

[Face p. 752] [b]

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* Chung-kuo Liang-shih Kai-k'uang /General Survey of China's Food/, Nanking: Hsing-cheng-yuan Hsin-wen-chu /Office of Information, Executive Yuan/, 1947, pp. 4-5.

See 1952 Nien Ching-chi Nien-pao /Economic Year Book 1952/, Hong Kong: Ching-chi Tao-pao She /Economic Bulletin Publishing Co./, 1952, pp. 37-38.

s & v Jen-min Shou-ts'e /People's Hand Book/, Tientsin: Ta Kung Pao /Ta Kung Daily/, 1955, pp. 511-512. Economic Bulletin, Hong Kong: March 10, 1953, No. 309, p. 12.

x Hua-chiao Jih-pao /China Daily News/, New York: August 4, 1955, Chen Yun's Report to the National People's Congress on July 21, 1955.

y Ibid. The total grain production in 1954 was 3390 million Shih-piculs, as reported by Chen. Using 23.8 per cent for East China's share (Ching-chi Tao-pao March 10, 1953, p. 12) to calculate, the total production of grain in East China was 911.91 million Shih-piculs (50.15 million tons). The proportional distribution between different crops was rice 45.4, wheat 13.5, soyabeans 7.0, tubers 10.5, and others 23.6. Economic Bulletin March 10, 1953, p. 12.

z Basing on Li Hsien-nien's Budget Report of 1955, the projected grain production will be 5.3 per cent higher than 1954, and allocate the amount of each crop produced according to the same ratio of 1954. (NCNA July 8, 1955)

** "Others" are the total amount of millet, kaoliang, corn, barley, oats, broad beans, and peas.

(Table 7 faces p. 752)

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(Table 7 faces p. 752)

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Table 8. Grain Production of East China by Provinces*
S = Shih-picula)
(Unit: Million. T = Tons.)

Grains	Kiangsu		Chekiang		Anhwei		Shantung		Fukien	
	1949	1951	1949	1951	1949	1951	1949	1951	1949	1951
Rice	76.64S (4.18T)	117.00S (6.44T)	51.42S (2.83T)	78.30S (4.20T)	39.60S (2.18T)	60.00S (3.30T)	0.60S (0.03T)	0.90S (0.06T)	28.76S (1.58T)	45.80S (3.41T)
Wheat	24.62S (1.32T)	56.58S (3.11T)	10.92S (0.58T)	12.78S (0.70T)	17.54S (0.96T)	40.16S (2.20T)	34.24S (1.68T)	65.70S (3.61T)	6.94S (0.36T)	7.30S (0.40T)
Soyabeans	7.74S (0.42T)	16.40S (0.90T)	1.30S (0.07T)	2.74S (0.15T)	2.58S (0.14T)	5.46S (0.30T)	5.82S (0.32T)	12.30S (0.67T)	0.64S (0.04T)	1.36S (0.07T)
Tubers	31.38S (1.73T)	38.42S (2.11T)	12.64S (0.69T)	15.38S (0.84T)	6.28S (0.34T)	7.66S (0.42T)	25.10S (1.38T)	30.74S (1.69T)	23.22S (1.27T)	28.44S (1.56T)
Others#	54.30S (2.98T)	67.42S (3.71T)	13.36S (0.73T)	15.80S (0.87T)	21.38S (1.18T)	26.06S (1.43T)	71.78S (3.95T)	87.84S (4.83T)	3.48S (0.19T)	4.38S (0.38T)
Total	194.66S (10.63T)	295.82S (16.27T)	98.54S (4.67T)	125.00S (5.76T)	78.38S (4.30T)	139.38S (7.68T)	137.54S (7.56T)	197.48S (10.85T)	63.04S (3.46T)	85.18S (4.67T)
Percentage of increase		↗52%		↗26%		↗78%		↗43%		↗35%

*Chung-kuo Nung-pao /Chinese Agriculture Bulletin/, Peking, Nung Yeh Pu /Ministry of Agriculture/, 1952, No. 1, p. 30; Ta-Kung Daily, Hong Kong, October 1, 1952. Hsin-hua Yüeh-pao /New China Monthly/, Peking, 1950, Vol. II, No. 4-6, pp. 1336-1337; 1951, Vol. III, pp. 378-379.

#"Others" including the total amount of millet, corn, kaoliang, barley, oats beans, and peas.

(Table 8 faces p. 752.)

(Table 8 faces p. 753)

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433 Table 7 indicates that, during the five-year period (1951-55), although great efforts were made to increase grain production, not one single year exceeded the pre-war 1931-37 average of 906 million shih-piculs (50 million tons). Probably flood and drought and the negative effects of land reform accounted for the failure. The statistical data of grain production of the individual provinces in East China in 1949 and 1951 are shown by shih-piculs in Table 8 below with equivalent tons in parentheses.

241 In 1951, nearly all the six provinces in-
433 creased production ranging from 26 per cent for Chekiang to 78 per cent for Anhwei over that of 1949. In terms of the total output, Kiangsu led by 295.82 million shih-piculs (16.27 million tons), Shantung came next with 197.48 million shih-piculs (10.85 million tons), Anhwei and Chekiang occupied third and fourth places, producing 139.36 and 125.00 million shih-piculs (7.65 and 5.76 million tons) respectively. The total grain production of Fukien in 1951 was 85.18 million shih-piculs (4.67 million tons), which constituted only about 10 per cent of the total grain output in East China in the same year.

V. THE ADEQUACY OF FOOD SUPPLY

433 The essential problem in East China is the determination of the adequacy of the supply of grain in comparison with the local demand. In order to approach the problem logically, the following steps are used: (1) the gross production data of different grains of 1954 are used as the basis for calculation; (2) from the gross amount of the unprocessed grains, provision for seeds, fodder, and waste are allowed and deducted; (3) the percentage allowed for the milling of different grains is set according to the nature of the product as well as the eating habits of the population;; (4) after reducing all the unprocessed grains to milled

Table 9. Grain Supply after Conversion into "Rice-Equivalent" Available for Human Consumption, 1954

(S = Shih-piculs. Unit: Million. T = Tons.)

Grains	Gross Production	Total Supply after Provision for Seeds, Fodder, and waste		Total Supply after Milling		Total Net Supply after conversion into Rice-Equivalent	
		Conversion Standard*	Quantity	Conversion Standard*	Quantity	Conversion Standard#	Quantity
Rice	366.30S (20.15T)	92.01	337.02S (18.54T)	92§	310.06S (17.06T)	1.00	310.06S (17.06T)
Wheat	108.92S (5.99T)	86.47	94.18S (5.18T)	80	75.34S (4.14T)	1.02	76.85S (4.22T)
Soybeans	56.48S (3.10T)	81.94	46.28S (2.54T)	100	46.28S (2.54T)	0.99	45.82S (2.51T)
Tubers	84.71S (4.66T)	64.00	54.21S (2.98T)	100	54.21S (2.98T)	0.28	15.18S (0.83T)
Others▼	190.41S (10.47T)	76.80	146.23S (8.04T)	89	130.14S (7.16T)	1.00	130.14S (7.16T)
Total	806.82S (44.37T)		677.92S (37.28T)		616.03S (33.88T)		578.06S (31.78T)

* FAO Food Balance Sheet for 1931-1937, compiled from FAO World Food Survey, Food Balance Sheet for China, 1931-1937.

Derived from the quantity of Calories of different grains and tubers by using the standard set up by FAO, v.n. 3.480 calories per kilogram (or 2.2 pounds or 2 Chinese catties) of rice as the basis of calculation.

§ The official milling standard of rice, as announced by the Chinese Communist Government, is 92. For other grains, the standard set-up by FAO was used.

▼ "Others" include corn, kaoliang, barley, millet, oats, broad beans and peas.

(Table 9 faces p. 754)

(Table 9 faces p. 754)

433 products available for human consumption, all the different grains, other than rice, are converted into "rice equivalent"; and (5) in calculating the total demand for grains in East China, the real population, regardless of age and sex, is converted into equivalents of "adult males."

Table 9 is a conversion table for different grains compiled in shih-piculs, with equivalent tons in parentheses.

The conversion of the real population into the equivalent number of adult males" is shown in Table 10 below.

[See next page for Tables 9 and 10.]

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Table 10. The Population Conversion of East China *

Province	Population	Population in Equivalents of "Adult Males"
Shantung	48.88	40.08
Kiangsu	41.25	33.38
Anhwei	30.34	24.88
Chekiang	22.87	18.75
Fukien	13.14	10.77
Shanghai	6.21	5.09
Total	162.69	133.40

* In making the conversion, the coefficient 0.82 is used. It represents the mean between 0.76 derived by C. M. Chiao in his China's Food and Population Problem, Shanghai, 1937, and 0.88 worked out by T. H. Shen in his Agricultural Resources of China, New York, 1951.

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Table 11. Cotton Production in East China*

(Unit: 1,000 Shih-piculs.)
1,000 Bales = 480 lbs.)

Province	1949 Shih-piculs	1949 Bales	1950 Shih-piculs	1950 Bales	1951 Shih-piculs	1951 Bales	1952 Shih-piculs	1952 Bales	1953# Shih-piculs	1953# Bales	1954* Shih-piculs	1954* Bales	1955▼ Shih-piculs	1955▼ Bales
Kiangsu	789	16.2	1,356	28.3	2,400	50.0	1,632	34.0	1,485	31.0	1,515	31.6	1,667	34.8
Chekiang	154	3.2	194	8.2	418	8.7	269	5.6	245	5.1	250	5.2	275	5.7
Anhwei	154	3.2	192	4.0	494	10.3	336	7.0	306	6.3	311	6.4	342	7.0
Shantung	667	13.9	1,699	35.4	2,868	55.5	4,622	96.3	4,208	87.6	4,289	89.4	4,718	98.4
Fukien	---	----	----	----	----	----	-----	----	----	---	----	---	----	---
Total	1,704	35.6	3,643	75.9	5,880	122.5	6,859	142.9	6,340	130.0	6,365	132.6	7,001	145.9

* /People's Daily/ Peking, January 27, 1950; /Liberation Daily/, Shanghai, January 6, October 17, November 14, December 28, 1951; September 9, December 27, 1952; Ta-chung Hung-yeh /Mass Agriculture/, Shanghai, Vol. VI, No. 3, December 1951, p. 69; /Economic Weekly/, Shanghai, February 26, 1953, pp. 16-18; Chung-nung Yeh-kan /The Farmers' Bank of China Monthly/, Nanking, Vol. IX, No. 6, January 30, 1948, p. 34; Economic Bulletin, Hong Kong, No. 309, March 10, 1953, p. 12.

Cotton production in 1953 was 9 per cent below the 1952 level; see Far Eastern Economic Review, Hong Kong, May 13, 1955, Vol.XVIII, No. 19, p. 601.

*The Cotton of East China in 1954 was slightly higher than that of 1953; an increase of 2 per cent is estimated; see Far Eastern Economic Review, Hong Kong, May 12, 1955, Vol. XVIII, No. 19, p. 60.

▼There were no natural calamities in 1955. An estimate of 10 per cent increase over 1954's production is assumed, although the projected increase is 20.6 per cent as revealed by Li Hsien-nien in his 1955 State Budget Report.

(Table 11 faces p. 756)

(Table 11 faces p. 756)

433 According to Tables 9 and 10 above, the total supply of "rice-equivalent" grains available for human consumption in 1954 was 578.05 million shih-piculs or 28.90 metric tons. On the basis of Wu Yuan-li's calculation of 217 metric tons of milled "rice-equivalent" grains required to feed 1,000 "adult males" per year,[17] the total supply of grain in East China in 1954 should have been sufficient for the consumption requirements of 133.2 million "adult males," or equivalent to the total local demand for grains in that particular year.

VI. COTTON PRODUCTION

248 During 1950-54, cotton production in East 433 China increased considerably but at an irregular rate. The statistical data for cotton production in this region are shown in Table 11.

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17. Yuan-li Wu, An Economic Survey of Communist China, New York, Bookman Associates, 1956, chapter V, p. 165.

1:Stanford U. S 4, 5 1956 AF15 East China AF15

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Table 12. Cotton Acreage in East China*

(Unit = 1,000)

Province	1949		1950		1951		1952		1953#		1954@		1955▼	
	Shih-mou	Acres	Shih-mou	Acres	Shih-mou	Acres	Shih-mou	Acres	Shih-mou	Acres	Shih-mou	Acres	Shih-mou	Acres
Kiangsu	4,632	772	5,724	954	7,908	1,319	4,248	708	4,038	673	6,836	1,089	7,189	1,198
Chekiang	1,224	204	930	155	1,302	217	768	128	732	122	730	122	803	134
Anhwei	968	161	1,182	197	1,626	271	870	145	826	137	826	137	909	151
Shantung	4,242	707	5,226	871	7,914	1,319	11,802	1,967	11,212	1,869	11,212	1,869	12,333	2,056
Fukien	-----	---	-----	---	------	-----	-----	-----	-----	----	------	-----	-----	-----
Total	11,064	1,844	13,062	2,177	18,750	3,125	17,688	2,948	16,804	2,801	19,304	3,217	21,239	3,539

* Chung-kung Tseh-kan /The Farmers' Bank of China Monthly/, Nanking, The Farmers' Bank of China, Vol. II, No. 6, June 30, 1948, p. 38; Liberation Daily, Shanghai, January 6, October 17, November 14, December 26, 1951, and September 9, December 27, 1952; Ta-chung Sung-yeh /Mass Agriculture/, Shanghai, Vol. VI, No. 5, December, 1951, p. 69; Economic Weekly, Shanghai, February 26, 1953, pp. 18-19; Economic Bulletin, Hong Kong, Ching-chi Tao-pao She /Economic Bulletin Publishing Co./, No. 309, March 15, 1953, p. 11.

The cotton acreage of East China in 1953 was estimated at about 5 per cent below that of 1952, as the parity prices between cotton and grain were lowered in that year.

@ An additional 2,500,000 Shih-mou (416,667 acres) of the new reclaimedcotton land was added in the Yellow Sea region, Kiangsu Province, 1954. See Hua Chiao Jih-pao /China Daily News/ New York, August 17, 1955.

▼ The acreage of cotton in 1955 was estimated by an increase in planting of 10 per cent over that of 1954, although the projected goal is 20.6 per cent as revealed by Li Hsien-nien's Budget Report of 1955.

(Table 12 faces p. 757)

(Table 12 faces p. 757)

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433 According to Table 11, since 1950 the rate of increase of production has been very rapid. Taking the figure for 1949 as 100, the index numbers were 214 in 1950; 345 in 1951; 403 in 1952; 366 in 1953; 373 in 1954; and 412 in 1955. The rise reached a peak in 1952 and dropped 37 per cent in 1953 because the parity price between cotton and grain was lowered in that year. In 1954, the great flood and drought in some areas reduced production, and by the end of the year producers had not reached their goal. In view of favorable conditions in 1955, the cotton production will have increased at least 10 per cent over that of 1954.

In terms of the acreage of cotton planted in the different provinces of East China, there has been a marked upward trend from 1950 to 1955, as is shown in Table 12.

248 433 According to Communist reports, some of the factors responsible for the rapid increase in cotton acreage and production were the fixing of a favorable parity price between cotton and grain and the improvement of per-unit yield. The increase and decrease in the adjustments of the parity price corresponded to the higher or lower cotton acreage. The prices which were quoted for grains of different regions are shown in the following tabulation.

248 243 435 Table 13 The Ratio of Cotton Price to Price of Grains */

(In weight-units of grain to one unit of cotton lint, 7/8" grade)

Region	1950	1951	1952	1953	1954	1955
Wheat	7.0	8.0	7.5-8.5	6.25-7.5	6.75-8.00	Same
Millet	8.0	8.5	8.0-9.5	6.75-8.0	7.50-8.25	as
Rice	6.5	8.5	8.0-9.0	6.75-8.0	7.25-8.25	1954

*/ Tu-pao Shou-ts'e [Newspaper Reading Handbook], Hankow, Chang-chiang Jih-pao, [Yangtze Daily Co.], 1950, p. 574; Ching-chi Chou-pao [Economic Weekly], Shanghai, May 28, 1953, NO. 28, p. 21; NCNA, March 3, 1954.

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Table 14. Cotton Yield Per Shih-mou and Per Acre*

Province	1949		1950		1951		1952		1953	
	Catties	Pounds	Catties	Pounds	Catties	Pounds	Catties	Pounds	Catties	Pounds
Kiangsu	88.9	94.8	139.4	142.4	166.5	162.1	211.5	232.5	196.5	216.2
Chekiang	68.4	75.3	230.8	253.9	174.9	192.4	190.9	210.0	185.6	204.2
Anhwei	86.7	95.4	88.5	97.4	165.8	182.4	210.6	231.7	148.4	160.0
Shantung	85.8	94.4	177.3	195.1	177.0	194.7	213.8	235.0	187.2	205.9
Fukien	----	----	----	----	----	----	----	----	----	----
Average	84.0	92.4	152.1	167.3	171.1	188.2	211.9	233.1	187.3	206.0

* Liberation Daily, Shanghai, January 6, October 17, November 14, December 26, 1951; September 9, December 27, 1952; Ta-chung Hung-yeh [Mass Agriculture], Shanghai, Vol. VI, No. 3, December 1951, p. 69; Economic Weekly, Shanghai, February 26, 1953, pp. 16-18; Economic Bulletin, Hong Kong. Ching-chi Tao-pao She [Economic Bulletin Publishing Co.], No. 207, March 10, 1953, p. 12.

(Table 14 faces p. 759)

(Table 14 faces p. 759)

1:Stanford U. S-4, 5 1956 AF 15 East China
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248 Among the East China provinces,
243 Shantung and parts of Anhwei and Kiangsu belong
435 to the wheat region, while a large part of Kiangsu, Anhwei, Chekiang and Fukien belong to the rice region. In 1953 the parity prices were lowered and the acreage and the production also decreased.

248 An upward trend in the average cotton
433 yield per unit of land was noticed during 1949-53, except for a slight fluctuation in 1953, 11.6 per cent below the figure for 1952. This loss was the result of natural calamities in Shantung and Kiangsu provinces. The cotton yields of different provinces from 1949 to 1953 are shown in Table 14.

1:Stanford U. S-4, 5 1956 AF 15 East China
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VII. TEA, SILK, AND OTHER SPECIALTIES

A. Tea

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433 East China is the leading tea-producing region in China. In 1952, the region produced approximately 50 per cent of the country's tea.[18] Fukien is noted for its black tea (or red tea) and flower-scented tea, and Chekiang and Anhwei are noted for the production of green tea. To make black tea, newly-gathered leaves are allowe to wither in the air in order to reduce their moisture and then rolled to break up the leaf cells and to allow the enclosed juice to come to the surface of the leaves for fermentation. The enzymes contained in the leaves continue to oxidiz and produce an aromatic flavor. The leaves are then baked and sweetened. Green tea is prepared by heating the leaves in an iron pan to destroy the oxidizing enzymes and prevent fermentation. The leaves are then rolled and baked. The main characteristic of green tea is its rich content of Vitamin C, which is not destroyed even at a temperature of 200° Centigrade. The best-known green tea is "Lung-ching" [Dragon-well] of Hangchow, Chekiang Province. Flower-scented tea commands a very wide market in North and Northeast China as well as in many European countries. It is made by scenting the leaves with rose, jasmine, or other fragrant flowers in order to increase its flavor.

In terms of the percentage distribution of the different varieties of tea in East China, green

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18. Economic Bulletin, Hong Kong, March 24, 1953, No. 311, p. 15.

245 433 tea constitutes 70 per cent, black tea 28 per cent, and all others 2 per cent; in distribution of production by provinces, Chekiang produces 46 per cent, Anhwei 41 per cent, and Fukien 13 per cent.[19]

It was estimated in 1952 that the total production of tea in China was 1,650,000 shih-piculs (90,750 tons), of which East China produced approximately 825,000 shih-piculs (45,375 tons).[20] The projected goal of tea production in East China will reach 1,110,000 shih-piculs (60,500 tons) in 1957, the last year of the Communists' first Five-Year Plan.[21]

B. Silk

231 433 East China also led in silk production -- almost 80 per cent of the country's output in the pre-war years.[22] The total production of silk cocoons in East China in 1934 amounted to 245 1,893,000 shih-piculs (104,115 tons). During the war the Japanese army destroyed over half of the mulberry gardens of East China, and production dropped sharply. The total output of silk cocoons in 1947 amounted to 41,000 shih-piculs (2,255 tons)

19. Ibid.

20. Cheng Chu-yüan, Chung-kung Wu-nien-chi-hua p'ou-hsi [An Analysis of Chinese Communists' First Five-Year Plan], Hong Kong, Freedom Press, 1955, p. 244.

21. Ibid.

22. Chung-yang Yin-hang Yüeh-pao [Central Bank Monthly], Shanghai, Central Bank of China, May 1947, Vol. II, No. 5, pp.54-57.

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231 and increased to 44,000 shih-piculs (2,420 tons)[23]
433 in 1948. After 1949, the Communists made a great effort to restore the pre-war level of silk production. In 1951, the gross output in East China was raised to 590,000 shih-piculs (32,450 tons).[24]

In percentage distribution of silk among the East China provinces, Chekiang contributed about 60 per cent, Kiangsu 33 per cent, Shantung 6 per cent and Anhwei 1 per cent.[25] The silk cocoons in Shantung Province are produced by wild silkworms which feed on the leaves of oak trees. In Chekiang Province, over 30 hsien [counties] are planted in mulberry trees. Chekiang's production of silk cocoons increased to 500,000 shih-piculs (27,500 tons) in 1954.[26] Other provinces of the region probably showed proportional increases in the same year. The goal of silk-cocoon production in East China for 1957 will be 1,520,000 shih-piculs (83,600 tons).[27]

C. Ramie, Hemp, and Jute

248
433 East China ranks first in hemp production in the country as a whole, for hemp is produced extensively in Chekiang, Kiangsu, and Fukien provinces. The strength of fiber is next only to

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23. Ibid.

24. Current Background, Hong Kong, American Consulate General, Feb. 15, 1952, No. 159, pp. 7-9.

25. Economic Bulletin, Hong Kong, March 17, 1953, No. 310, p. 16.

26. Wen-hui Pao [Wen-hui Daily], Hong Kong, June 8, 1955.

27. Cheng Chu-yüan, op. cit., p. 244.

248 that of ramie, which is stronger than most other
433 species. Hemp is used chiefly for making canvas, ropes, coarse fabrics, and gunny sacks. During recent years, it has been widely planted in Chekiang Province, and the output[28] in 1953 showed a twenty-fold increase over 1936.

Ramie is widely produced in East China provinces. Its strength is about three times that of hemp and eight times that of rayon and cotton.[29] It is used mainly for manufacturing canvas, ropes, nets, and linen cloth. Jute, another species of the same family, is grown in the northern sections of Kiangsu and Anhwei as well as in Shantung. It is used for making rugs, mats, and gunny sacks. The output in East China is comparatively small.

D. Oil-bearing Crops

249 433 Excluding soyabeans, the oil-bearing crops in East China are peanuts, sesame seeds, rape-seeds, cottonseeds, and teaseeds. Although the production of soyabeans was far greater than that of peanuts in 1952, the output of peanut oil was 2,200,000 shih-piculs (121,000 tons), about 30 per cent higher than the output of soyabean oil in the same year.[30] The discrepancy was due to the fact that the local population prefer to use peanut oil. The total East China production of edible oil from different oil-bearing crops in 1952 amounted to approximately 8,000,000 shih-piculs (440,000 tons). Since 1953, the supply of edible oil has decreased; therefore, the Communist authorities intensified their plans for expansion of the acreage

28. Wen-hui Daily, loc. cit.

29. Chinese Economic Journal Shanghai Bureau of Foreign Trade, Oct. 1936, Vol XIX, No 4, pp. 345-346. [See next page for No 30.]

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249 of oil-bearing crops throughout all regions. The
433 projected national goal of an increase of 53.7 per cent in 1954 over the production in 1952 was reported by Li Fu-ch'un in the first Five-Year Plan.[31]

VIII. FISHERIES OF EAST CHINA

228 Because of its long coastline and numerous
433 streams and lakes, East China is especially rich in both salt-water and fresh-water fish resources.

Of the principal fishing areas of Kiangsu and Chekiang, Chou-shan (Chusan) is the most famous. Over 10,000 fishing boats gather near the Chou-shan Island each spring to catch many different species of fish. The goal set for 1955 is 6,400,000 shih-piculs (352,000 tons),[32] approximately four and a half times that of 1949.

Kiangsu and Chekiang have abundant fresh-water-fish resources; Kiangsu has 1,173.7 million shih-mou (195.6 million acres) of river area and 1.6 million shih-mou (266,667 acres) of lake area, while Chekiang has a combined river and lake area of over 2,000,000 shih-mou (over 400,000 acres). A tremendous quantity of fish is caught each year.

IX. WATER CONSERVATION IN EAST CHINA

731 For many centuries the Hwai River and its tributaries have been the main sources of flood

30. Economic Bulletin, Hong Kong, Ching-chi Tao-pao She, Mar. 17, 1953, #310, p.16.
31. NCNA, Peking, July 11, 1955.
32. People's China, Peking, Feb. 1, 1955. p. 13.

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135 178 Ma-an-shan plant in Anhwei.[4] As for other industries, the Five-Year Plan seems to give scant attention to East China with the exception of Shanghai's machinery industry, which again is largely a case of making full use of existing facilities and the local skilled labor.

III. PRESENT STATUS OF SHANGHAI'S INDUSTRIES

178 Lest we should underestimate the present industrial importance of Shanghai in the light of what has been said above, attention should be called both to the degree of industrial recovery in Shanghai which has been reported by the Communists and the status of some of the city's industries.

464 According to the Shanghai Economic Weekly of February 5, 1953, using 1950 as the base year (100), for 1952 the index of the number of workers employed in Shanghai's light manufacturing industry stood at 138, that of electric power consumption by the same industrial group was reported at 153, and the 433 volume of sales was 199. Another indication of the degree of industrial recovery in

4. Cheng Chu-yüan, Chung-kung Wu-nien Chi-hua P'ou-hsi [An Analysis of Chinese Communists' First Five-Year Plan], Hong Kong, 1955, p. 45.

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433 Shanghai may be found in the following output indices for individual products in 1952, again using 1950 as the base year.[5]

Product	Output Index 1952 (1950 = 100)
Canned food	4,887
Fountain pens	1,100
Tires	726
Paper	243
Soap	212
Cigarettes	192
Sheets	160
Enamel ware	150
Rubber-soled shoes	123
Tooth paste	120
Thermos bottles	112
Towels	104

The selection of 1950 as the base year by the Communist was evidently designed to make the apparent gain in production as shown above more impressive; following a devasting Nationalist air raid in February 1950, which

5. Economic Bulletin, Hong Kong, December 1953, pp. 14-15.

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433 seriously disrupted the city's power supply, industrial production was at a low ebb for a considerable time during the year. However, even if we allow for exaggeration, it cannot be denied that there has been a significant recovery of industrial production in Shanghai following the establishment of the new regime.

According to a Hong Kong report, the total value of industrial production in Shanghai in 1953 was equivalent to 368 per cent of that of 1950.[6] Other reports have put the industrial production of Shanghai in 1953 as equivalent to one-fifth of that of the entire country.[7] 402 The city is also said to be responsible for 39 433 per cent of the country's total spindleage and one-third of the country's machinery-manufacturing capacity.[8] The annual output of electrical and industrial machinery in Shanghai registered, according to one Communist report, a sixfold increase between 1951 and 1953, and growth was especially notable in the production of machine tools and spindles.[9]

6. Wen-hui Pao [Wen-hui Daily], Hong Kong, June 22, 1955, p.

7. Cf., for instance, Far Eastern Economic Review, October 29, 1953, p. 551.

8. Economic Bulletin, Hong Kong, March 29, 1954, p. 12.

9. New China News Agency dispatch, September 30, 1954.

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402 Machinery produced in Shanghai has been used
433 in many construction projects elsewhere, including the Yümen oil field in Kansu, the new automobile manufacturing plant in Ch'ang-ch'un, and other factories in Manchuria. Shipbuilding, another branch of heavy-machinery manufacturing, is also highly developed in Shanghai.

IV. SURVEY OF SELECTED INDUSTRIES IN EAST CHINA

The above general review may be further supplemented by a brief discussion of some selected industries.

A. Coal

316 There are relatively few large coal
433 mines in East China. Among the most important are Huai-nan in Anhwei, Tzu-po and Tsao-chuang in Shantung, and Chia-wang in Kiangsu. Total coal production in East China may be roughly estimated at 5.3 million tons in 1949, which rose to 11.1 million tons in 1953.[10] Twenty per cent of the region's total

10. Estimated from the following sources: Hsin-hua Yüeh-pao [New China Monthly], Vol. I No. 2, Dec. 15, 1949, p. 410; People's Daily, Peking, No. 16, 1952; New China News Agency, Peking, Dec. 29, 1953, and Jan. 11, 1954.

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316 production was derived from Huai-nan; Tzu-po
433 and other mines in Shantung probably contributed about 75 per cent. On the other hand, total coal consumption by the electric utility and industrial plants in Shanghai alone amounted to no less than 7.9 million tons in 1953, while for the region as a whole the corresponding figure would be about 11 million tons.[11] Obviously, such consumption requirements, which did not as yet include demand for railway and bunker fuel as well as household consumption, could not be met out of the region's own coal production.

The Huai-nan coal mine, as mentioned earlier, is one of the few large construction projects earmarked under the first Five-Year Plan in East China. After the adoption of new mechanized production methods allegedly suggested by Soviet experts, the Communists reported a tenfold increase in production in 1952 over the corresponding figure in 1949.[12] Sinking of a new pair of coal shafts was started in March 1954, and construction was started on two additional pairs of vertical

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11. Estimated from: Wen-hui Daily, Hong Kong, Aug. 26, 1953; New China News Agency, Peking, Jan. 11, 1954.

12. Kung-jen Jih-pao [Workers' Daily], Peking, Nov. 15, 1952.

316 433 shafts in the latter part of the same year. The shafts are scheduled for completion in 1957.[13] Capital investment was said to have been stepped up during 1955 when total annual investment was to equal the entire amount invested in 1951-1954. The reconstruction of four pits was said to have been completed in April 1955, raising the mine's output by 17 per cent.[14] The same report also mentioned the construction of more new shafts than the number mentioned in the report of the preceding year. Total production at Huai-nan, according to the Five-Year Plan, will reach about 6.85 million tons in 1957, which, if accomplished, will make it one of the largest mines in the country outside Manchuria.[15]

B. Electric Power

377 Since the establishment of the Communist regime there has not been any report on the construction of large thermal power plants in East China. According to a comparatively complete report in 1948, there were 23 electric utility plants in this area, ranging

13. New China News Agency, Hopei, March 16, 1954.

14. Survey of China Mainland Press, Hong Kong, April 15, 1955, No. 1,028, p. 30.

15. Ta-kung Daily, Tientsin, July 30, 1955.

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377 carried out both to reduce foreign exchange outlay and as a countermeasure to the Nationalist blockade. However, this development has led to even greater dependence on coal which, as we have seen, is by no means easily available in East China.

C. Iron and Steel

327 433 As for the iron and steel industry in this region, two large blast furnaces were installed by the Japanese at Tsingtao in Shantung Province during 1943 and 1944. These had an estimated annual capacity of 110,000 tons of pig iron.[21] At Ma-an-shan in Anhwei Province the Japanese also planned to erect 20 small blast furnaces with an estimated capacity of about 73,000 tons.[22] Two small blast furnaces with an estimated capacity of 16,000 tons a year were also reported in operation during World War II.[23] Recent information has been lacking in detail, although it is known that the Ma-an-shan plant is being expanded under the Five-Year Plan and that pig iron shipments from Ma-an-shan to Shanghai have been in progress.

21. Foreign Minerals Survey, Washington, D.C., Department of Interior, Jan. 1948.
22. Ibid., Vol. II, No. 7, pp. 35.
23. Ibid.

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327 There are two principal steel works in
433 East China, the Shanghai Iron and Steel Works and the Hsin-ho Iron and Steel Works, both located in Shanghai. The former is equipped with two 10-ton open-hearth furnaces and has an annual capacity of about 12,400 tons of ingots and 50,000 tons of rolled steel products. The Hsin-ho works is equipped with two 10-ton open-hearth furnaces and has an annual capacity of 16,500 tons of ingots, 30,000 tons of rolled steel, and 20,000 tons of steel wire.[24]

All in all, however, the iron and steel industry of East China is relatively little developed. This situation is understandable in view of the lack of iron and coal resources in the region.

D. Cotton Textiles

288 Contrary to its backwardness in the
433 production of iron and steel, East China is the most highly developed area in China for the manufacture of consumer products, as we have indicated. In particular, the cotton

24. Chung-kuo Kung-yeh [China's Industry], Peking, April 20, 1950, Vol. I, N. 12, pp. 21-22.

1:Stanford U. S-4, 5 1956 AF15 East China
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288 textile industry stands out as the most
433 significant achievement in the country's development of modern manufacturing.

The total cotton spindleage in China in 1937 was 5,635,006, of which 51.8 per cent were owned by Chinese interests, 44.1 per cent by the Japanese, and 4.1 per cent by the British.[25] After the war, all the Japanese cotton textile mills, mostly located in Shanghai and Tsingtao, were confiscated by the Nationalist Government and incorporated into a large state firm known as the China Textile Corporation. In 1949, East China possessed a total of 3,474,694 cotton spindles, which constituted 80 per cent of the total in China.[26] In 1953, the number dropped to 3,274,694, representing a 6 per cent decrease as compared with 1949.[27] As regards the geographical distribution of cotton spindles in East China in 1953, Kiangsu constituted 85 per cent, of which Shanghai again accounted for about 78 per cent. In addition to the mills in Shanghai, there were, in 1951, 53 private cotton mills in South Kiangsu with a total of 520,000 spindles.

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25. Plan for the Industrial Development of China, Nanking, March 1948.

26. Tung-pei Jih-pao [Northeast Daily], Mukden, April 18, 1949; Hsin-wen Jih-pao [Hsin-wen Daily], Shanghai, March 5, 1951.

27. Wen-hui Daily, Hong Kong, May 19, 1953; June 8, 1953; July 2, 1953; Aug. 9 and 14, 1953, September 5, 1953, Nov. 1, 1953; Kwang-ming Jih-pao [Enlightenment Daily], Peking, Aug. 6, 1953.

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288 Of these, 246,000 spindles were in Wu-hsi
433 and 274,00 in Ch'ang-chou, Soochow, and
S'ung-chiang.[28] In North Kiangsu, most of the mills are centered around Nan-t'ung and Hai-men, with a total of 179,632 spindles in 1950.[29] Another important cotton textile industrial center in East China is Tsingtao, Shantung Province, where there were about 350,000 spindles in 1953, constituting nearly 11 per cent of the spindles in the whole region.[30]

The total number of machine looms in China was estimated to be 67,900 at the time of the Communist occupation of the Chinese Mainland in 1949.[31] According to comparatively recent information, the total number of looms in Shanghai and Tsingtao amounted to 46,000 and 4,800 respectively[32] in 1953.

Regarding the output of cotton yarn, East China produced 1,256,000 bales in 1949,

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28. Survey of China Mainland Press, Hong Kong, U. S. Consulate General, May 11 to 15, 1951, No. 104, p. 50.

29. Economic Weekly, Shanghai, March 16, 1950, No. 11, p. 14.

30. Atlas of the People's Republic of China by Provinces, Shanghai, 1953, p. 32.

31. Yuan-li Wu, op. cit., p. 307.

32. Wen-hui Daily, June 22, 1955, pp. 32-33.

288 constituting 70 per cent of the total production
433 of the whole country. In 1953, the output reached 25,561,770 bales,[33] more than double the 1949 output, but only about 65 per cent of the country's total production in that year.[34] East China again takes the lead in the production of cotton cloth. Though complete data are lacking, considerable growth has been reported under the Communist regime. If we take the production of 1947 as 100, it increased to 133 in 1950 and to 157 in 1951.[35]

288 Considerable progress has been made in
433 the development of textile machinery plants
475 since 1950. There are, at present (1955), seven plants for manufacturing textile machinery in China, of which five are state-owned and two are joint state-private enterprises. In East China, the Shanghai No. 2 Textile Machinery Works is state-owned and the China Textile Machinery Works and the Far Eastern Card Clothing Manufacturing Plant, both located in Shanghai, are joint

33. 400 pounds each.

34. Economic Weekly, Shanghai, Feb. 26, 1953, pp. 16-18; Chinese Industry, Peking, Jan. 1950, p. 37; Wen-hui Daily, Hong Kong, Oct. 1 and 6, 1953.

35. Survey of China Mainland Press, Hong Kong, U. S. Consulate General, No. 220, p. 30.

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288 state-private industries.[36] Data on the
433 textile-machinery production of East China
475 are not available, but the total production of the seven plants during 1951-53 was reported to be 600,000 spindles and 18,500 automatic looms, with which 9 state-owned cotton textile mills have been equipped.[37]

V. CONCLUSION

178 Although East China remains a vitally important part of Communist China's industrial life and will be expected to supply both capital and consumer goods to a large segment of the country's population during the Five-Year Plan, it is no longer scheduled for intensive development in the future. There may be exceptions to this general statement, particularly in certain parts of Shantung, and possibly also in Fukien, once railway construction has established an effective overland route between Amoy and the Chekiang-Kiangsi Railway. However, on the whole, it may be said that East China's heyday in Chinese industry is over. The statement is especially true in the case of Shanghai.

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36. New China News Agency, Peking, Nov. 1, 1954.

37. Hsin-hua Yüeh-pao [New China Monthly], Peking, Feb. 1954, No. 2, pp. 169-70.

1:Stanford U. S-4, 5 1956 AF 15 East China
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IX. THE FIVE-YEAR PLAN AND CHINESE LABOR

185
493 The Chinese Communists began their first Five-Year Plan in 1953. According to the plan,[56] China's industrial output is to double in value by 1957. Lai Jo-yü, chairman of All-China Federation of Trade Unions, in a speech delivered on July 21, 1955 to the National People's Congress, said, "The enthusiasm and creative spirit of the working masses are the most important guarantees to the realization of the Five-Year Plan. Labor emulation is the concentrated expression of labor enthusiasm and creative spirit of the working masses as well as the basic method of socialist construction."[57] Lai's speech indicated that "labor emulation," as the Communists have termed it, will help to increase production, but it is certain to put a still heavier burden on the shoulders of the Chinese workers.

In the first Five-Year Plan, the Communists scheduled no heavy industrial projects for the East China Region. Apart from the Huai-nan coal mines and the Ma-an-shan iron mines in Anhwei Province, the regime was unwilling to invest added capital in enterprises in this region. But as the center of light industry

56. Far Eastern Economic Review, Hong Kong, July 14, 1955, p. 42.

57. Ta-kung Daily, Tientsin, July 22, 1955, p. 3.

185 in China, Shanghai was to play an important
433 part in the plan, especially as a training center for skilled labor.

Early in 1953, in response to the call of the All-China Federation of Trade Unions for "labor emulation," more than two hundred state enterprises in Shanghai announced their production plans for the year. The Shanghai Electric Appliance Plant had sets its 1953 production goal 46 per cent above the 1952 record for production. The 1953 production plans of over 50 textile mills in East China showed an increase over 1952 records.[58] In 1954, the total value of production in 73 light industries in Shanghai surpassed the 1953 production by an average of 19.46 per cent.[59] A machine-tool factory in Tsinan, Shantung Province, completed its quota for 1953 some 52 days ahead of schedule.[60] In 1954, workers in local industries in Chekiang Province developed a "technical renovation campaign," increasing labor productivity by 20 per cent.[61] These sporadic reports indicate how the "labor emulation" drive in East China has accelerated since the start of the Five-Year Plan. But enthusiasm alone cannot teach a worker to handle a machine or obtain for him a new one. It is of greater importance to raise the technical level of the workers and to train skilled labor. This task has been assigned to the industries of Shanghai under the first Five-Year Plan.

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58. People's China, Feb.1,1953,p.34.
59. Ibid., Feb. 15, 1954, p. 26.
60. Ibid., Dec. 16, 1953, p. 35.
61. NCNA, Hanchow, Jan. 9, 1955.

2: Murphy G-4 (no date) 1953 AF15 East China AF15

fields growing other crops (primarily cotton), since this entails a thorough turning over of the soil which crop rotation alone would not accomplish. When the exchange is completed, the new surfaces are then overlaid with an average per acre of 70 tons of mud dug from the canals. Maintenance of navigability in the canals is a communal responsibility, and farmers are recompensed for their dredging labor by using the highly fertile calcareous mud (which as a rule has supported a heavy growth of water weeds as well as ultimately receiving consider[illegible]le farm and village waste), also by making use of the canals to market their production and receive goods from outside.[4]

The farms are small, 93 per cent of them under 50 *mow* and 25 per cent under 5 *mow*, with an average size of 34 *mow*, according to a Chinese statistical study[5] (one *mow* equals approximately one sixth of an acre). Their cultivation is better described as gardening than as farming. Tools in general use are limited to the *t'u t'ou* (earth head)—a large-bladed hoe—and smaller metal-headed rakes, hoes, and mattocks, all designed for painstaking hand labor. Water is transferred from the canals to fields for irrigation by means of endless chains of small buckets mounted on inclined frames and driven by foot treadles.[6] The average number of total animal units per farm is lower in this area, according to Buck, than anywhere else in China.[7] This is due to the small size of the farms, and to the abundance of human labor, which cannot afford to allocate feed for animals in return for the labor, meat, and manure which they produce. Manual gardening gives a greater return than animal husbandry or farming with draft animals from this fertile and repeatedly refertilized soil in proportion to the food it consumes, and permits a population of 40 million people in the fertile triangle.

With such intensive cultivation, crop yields in the fertile triangle are among the highest in China. Buck's samplings show both rice and wheat yields in this area consistently among the upper five per cent of rice and wheat yields for the 161 localities in China covered by his study.[8] Within a thirty-mile radius of Shanghai, where the city's night soil is cheaper and more readily available than in outlying districts (see below, pp. 162–64), yields of all crops are exceeded by only two counties in China (both near Canton)

reported by Buck. According to his figures, the grain production (or equivalent) per male adult of the population (or equivalent) within this thirty-mile radius averages 2594 kilograms, as compared with an all-China average of 1400 kilograms.[9]

The problem of how Shanghai is fed is, however, not answered merely by the facts of fertile soil, intensive cultivation, and high crop yields in its immediate hinterland. While the delta is clearly productive, it is equally clearly densely populated, and it is likely that a larger proportion of the total population of the fertile triangle lives in cities than is the case in any other area of comparable size in China (map 5).

Buck estimates that the consumption of food energy on farms in this area is 3486 calories per adult-male unit per day, a high figure for a so-called subsistence agricultural economy, and exceeded in Buck's figures for China only by the rice-tea area immediately to the south.[10] Far from being a subsistence economy, the triangle supports a relatively commercialized agriculture. Buck estimates for example, that the farmers of this area sell 61 per cent of their farm products immediately after harvest, and that 60 per cent of farm products are sold (i.e., first sale) as far away as the nearest market town, as distinct from the local village. Both of these figures are exceeded only by those from the double-cropping rice area of Kwangtung.[11]

Assuming that the favorable natural environment and the intensive farming methods result in a total food production great enough to allow a surplus for feeding the delta's cities, how is it marketed in this pre-industrial economy? Cities of the magnitude of Shanghai have hitherto never developed except where mechanization and technological improvement in agriculture have been accompanied by the growth of railways, and later, highways.* Shanghai, competing for the food surplus of the delta with Hangchow, Nanking, Soochow, and other large delta cities, added well over three millions to its population between 1843 and 1936, while agricultural practices in the delta remained in general just as they

* Ancient Rome and Peking, both cities of approximately one million long before the industrial revolution, might constitute exceptions. Both owed their size primarily to their administrative functions, and both depended heavily on water transport.

2: Murphy G-4 (no date) 1953 AF15 East China AF15

have been during the last 1,000 years. Improvements in transport facilities during the same period were slight. As stated above in Chapter Seven, the only railway lines serving Shanghai during the twentieth century were those to Nanking and Hangchow (opened in 1908 and 1909 respectively). They have never become large volume carriers on a Western scale. Highway development contributed even less to the total transport resources of the area. For a densely populated, highly productive area which also contains several large cities dependent in varying degrees on industry, this transport network is minimal.

The Shanghai Rice Market

Rice is the basic food commodity for Shanghai. A sampling survey of workers' families in Shanghai by the Bureau of Social Affairs during 1929 and 1930 * [12] showed the average worker's diet (by percentages of total money spent on food) to be 53 per cent cereals (of which rice was 90 per cent, wheat 5 per cent, and other cereals 5 per cent), 18 per cent vegetables and beans, 16 per cent meat, fish, and eggs, 8 per cent condiments, 3 per cent fruit, and 2 per cent miscellaneous. Since cereals may be presumed cheaper by weight than the other items in the list (as well as having a higher caloric value by weight unit), the importance of rice in the diet by weight (which is the leading consideration for transport problems) is thus greater than these figures indicate. Fortunately, statistics are more readily available for rice than for any of the other food items.

While no complete figures exist to show the rice supply pattern, trading in rice on the Shanghai market was recorded in considerable detail during most of the 1920's and 1930's, and an analysis of the published market reports provides a relatively clear quantitative picture of the main outlines of the city's food supply. The monthly reports issued by the General Chamber of Commerce of Greater Shanghai list supplies of rice entering the city according to source.[13]

* Chiang I-shih, Production, discusses regional differences in the consumption of cereals as between south China, the Yangtze region, and north China, and includes a table showing these differences for the major cereals, as of 1936. For the Yangtze region as a whole he estimates that rice formed 40 per cent of the cereal diet, wheat 20 per cent, minor cereals 14 per cent, and other food crops 26 per cent.

438 Most of the places so mentioned recur every month except during
489 the rice planting season from early May to early June, and nearly all of them cluster within a relatively small area in the immediate neighborhood of Shanghai (map 5). In about half the cases they are *hsien* towns (county seats), which presumably draw on most of their respective *hsien* (counties), and in the other cases simply towns or villages which serve as collecting places for the rice-producing areas immediately around them. For the most part, they are located with indifference to existing road and railway networks. Most of the exceptions are large towns through which the road and/or railway are obliged to run in any case. The majority of the places however are located on main waterways, and in every case there is a direct water connection with Shanghai.

•433 When the rice supply pattern for Shanghai as shown in these
438 reports is compared with total figures for rice production in Kiangsu province by *hsien*,[14] it is seen that for the most part only the heavy rice-producing *hsien* which lie within about 75 miles of Shanghai send amounts to the city significant enough to be recorded consistently in the market reports. If a surplus exists in the other heavy rice-producing *hsien* * then either transport costs to Shanghai are too high for this rice to compete with areas nearer the city and it therefore moves to other consuming centers, or Shanghai can draw sufficient amounts from the nearer areas at a reasonable price to fill the majority of its rice needs.

For example, Kashing, an important rice marketing center on the railway 60 miles southwest of Shanghai sends little of its rice to Shanghai, although it does send large amounts of locally produced ginger. The comparatively high unit-value by weight of ginger can bear transportation costs which make shipment of rice uneconomic by either rail or water in this case. Another rice center, however, 19 miles farther south on the railway, sends large amounts of local rice to Hangchow 39 miles away. It is near enough apparently to be included in Hangchow's tributary rice area.[15]

438 Although water transport, especially in this delta area, is relatively
505 easy and cheap, it is also relatively slow, and it is reasonable to find

* Kiangsu government figures indicate that this is the case — *Kiang-su sheng-chien*, cited above.

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consumption in the city. As in the case of Shanghai, Canton may act as an entrepôt for rice imports to other cities.

This may suggest that China as a whole produces enough to feed itself, even by traditional farming methods, if only the food could be transported cheaply enough. As it is, foreign rice moves only to the large coastal cities, because transport costs once it leaves the sea prevent further penetration. The rice comes in because at certain periods it is cheap, and it is cheap relative to Chinese rice primarily because of the difference in transport costs between sea and land. It may be found when full facts are available that the flow of rice to large Chinese cities, which depends on price, is governed predominantly by transport costs, as it is in the case of Shanghai, and that where cheap transport is possible, local sources form the major part of the supply.

Other Food Commodities

The Yangtze delta, and more especially the fertile triangle, is a specialized agricultural area, more so than most agricultural regions of China because of its greater degree of commercialization. Its special crop is rice, with cotton, mulberry, and vegetables the only other significant items. Some wheat is grown, but it is of relatively minor importance in the fertile triangle and is raised mainly as a dry-field winter crop between rice plantings. Shanghai's dependence on local sources for rice is thus not matched by the rest of its food supply. The significance of the city's water connections with other agricultural regions is apparent in the fact that in a largely pre-railroad and pre-commercial economy, Shanghai is able to depend on distant sources for many food items in a way, if not to a degree, which is in certain respects comparable to the food supply pattern developed for large cities in the United States and Western Europe.

Shanghai has its own truck- and market-garden area, much as large Western cities have, with the difference that vegetables in particular have always been grown there and that environmental conditions in the fertile triangle are virtually ideal for market-garden-type production. Near most Western cities, soil, climate, and relief must often be fitted with difficulty into the needs of the city for fresh local food. Vegetable production in the fertile triangle

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served, packed in barrels, and shipped to Shanghai by junk, but this supply also is irregular and its price fluctuates widely.[43]

The supply and price of fresh-water fish are much steadier. The catch from the lakes, canals, and rivers of the delta comes in alive in specially constructed boats with built-in wells floored with grating through which the water can circulate freely. The fish are fed en route with powdered egg yolk, and the average journey from source to Shanghai is about three days, or approximately 100 miles. These boats are built for the Shanghai trade, since fish do not travel alive for such relatively long distances to any other market. The boats avoid the lower reaches of Soochow Creek in approaching the city because they fear that its polluted water will harm or kill the fish.[44] Several alternate routes are available. Fish are also transported alive to Shanghai in tanks from places along the Yangtze as far as Wuhu, Hukow, and Kiukiang, the water being changed several times a day en route.[45] Although no complete figures exist, it is estimated that the supply of fresh-water fish and its sale in Shanghai are much greater than of sea fish.[46] This fact is certainly related to the ease of live shipment by water, which maintains a steady supply at a relatively constant cost.

Of the higher unit-value food items discussed above, only fruit and cured hams travel long distances independently of waterways. The extension of the egg supply area to as far as Hankow would seem to be related to the water connections between it and Shanghai. In the case of fish, although Shanghai is an ocean port near the main fishing grounds of the central China coast and served by a large commercial fleet, the city's fish market is dominated by a supply whose freshness, cheapness, and abundance at all seasons is the direct result of inland water transport.

Local Rice Surpluses, and the Future

There remain two principal unsolved problems. The first is accounting for a rice surplus in the densely settled delta where so many large cities compete for the food produced on these tiny farms by traditional farming methods. Only indirect explanations can be suggested, but it should be remembered that the Yangtze delta is by no means unique in this respect. The three great rice-exporting

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433 areas of Asia are all deltas, and all are of the same order of population density as the Yangtze delta: the lower basins of the Mekong, Menam, and Irrawaddy Rivers. Each of these deltas also contains a primate city, and in addition produces most of the rice for the entire population of each country (Indo-China, Siam, and Burma respectively). Yet each of them has continued, under peace-time conditions, to produce large yearly surpluses of rice for export.

503 The Sui emperor Yang Ti (A.D. 605–618) first joined together
433 existing natural and artificial waterways into a connected system running from Hangchow in the south to northern Kiangsu and thence westward across Honan to the Sui capital at Ch'angan (modern Sian). This system of waterways linking the rich rice areas of the delta with the military and political centers of the north included several branches, among them a route to the Peking area which was later incorporated in the Grand Canal of the Mongols.* The southern half of the present Grand Canal was completed from Hangchow to Kaifeng during the northern Sung dynasty (A.D. 960–1127), *inter alia*, to bring rice for the supply of the court and capital at Kaifeng. During the Yüan (Mongol) dynasty (1260–1368) the canal was extended from Kaifeng to Peking, the Yüan capital, and up to the time of the late Ch'ing dynasty (1644–1911), with its capital also at Peking, rice to feed successive imperial centers in arid north China flowed in great volume out of the productive Yangtze delta.

433 Apparently a local surplus existed throughout this period, but it was not allowed to accumulate locally as the basis for a new population growth in the delta. By a coincidence which may or may not be significant, the end of the imperial system (the revolutionary Kuomintang overthrew the Ch'ing Government in 1911, and established its capital in 1927 at Nanking) came at about the beginning of Shanghai's major population growth (graph 1). It is certainly possible that instead of going to Peking, the delta rice

* Chi Ch'ao-ting, *Key Economic Areas in Chinese History* (1936), pp. 114–115, in giving an account of this development and its later extensions, shows that canals between the Huai and the Huang were built at least as early as the fifth century B.C., and that a through water route between the Yangtze delta and western Honan apparently existed by the third century B.C.

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surplus began at this period to move to Shanghai and has continued to do so.

Grain shipments on the Grand Canal from the delta to Peking had actually become insignificant after the Taiping Rebellion (1850–1864), and ceased entirely in 1901. Sea transport of rice was substituted until 1911, but it never brought from the delta to Peking more than a small fraction of what had previously moved by the Canal. During the nineteenth century, Kiangsu and Chekiang had yearly quotas of tribute rice shipments to Peking of over one million piculs each, totalling for both over 320 million pounds,[47] or about one-third of the annual rice consumption of Shanghai alone in the 1930's. However Morse suggests [48] that the rice actually collected (much of which never got to Peking) may often have been six times the official quotas.

The population of Peking did not decline after 1911, since the city remained the seat of a northern warlord regime and became China's largest rail junction, especially with the economic development of Manchuria. Its estimated population total in 1936 was 1,400,000, in all likelihood the highest figure it had ever reached, as compared with about 800,000 in 1900. But it was no longer the seat of a court, garrison troops, and an extensive bureaucracy, recruited from all over China including the rice-eating south, and with power to command shipments of tribute rice, which made up part of many official salaries. After Peking ceased to function as the imperial capital, its population subsisted primarily on the millet and wheat readily obtainable from north China, while the flow of rice from the Yangtze delta followed economic rather than imperial dictates.

It does however seem possible that rice surpluses in the delta available for urban consumption have been greater since the twentieth-century growth of Shanghai (and of its many urban rivals in the delta) than during the imperial period. The following paragraphs suggest one explanation of this. Another might be that local farmers had less incentive to produce rice when most or all of the surplus went to Peking as tribute, or was absorbed as "squeeze," than when they could sell it in a reasonably free market for consumption in Shanghai.

In the early years of the foreign settlements when foreigners were

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241 from large Chinese and Japanese cities than in the remainder of the rural districts, into which the green fades off beyond 30 or 40 miles. This is particularly true at Shanghai, and is most clearly seen from the air, but it also strikes the eye on the trip by train from Shanghai to Nanking, or in walking through the country.

Night-soil distribution could have provided an automatic increase in crop yields in the immediate vicinity of Shanghai as the city's population grew. In a country where even near the large coastal cities and under a system of relatively commercialized agriculture, chemical fertilizers are beyond the means of the farmers, the heavy use of night soil in the neighborhoods of large cities where it can be purchased at a price even the poorest farmer can afford can be assumed an important factor for agriculture. In the case of Shanghai, it may help to explain the apparent local surplus of rice from the delta which goes to feed the city.

722 433 439 The second problem concerns the future. Shanghai up to 1936 had managed to feed itself largely from its local supply areas. During the disturbed war years, virtually unbroken from 1937 to 1949, it was for long periods forced to depend on imported rice, although the inference is still that under normal conditions the local supply areas remain adequate. But can the city continue to grow on this basis, or will the population not eventually outrun the food supply as it has done repeatedly in the past throughout China? Obviously this is a possibility. It would lead to greater dependence on rice imports, and greater use of railways and highways as these expand and become cheaper carriers, to bring rice and other food into the city from longer distances. In the absence of figures and information for the period since the war with Japan comparable even to the inadequate data for the pre-1937 period, we have no reliable basis for judging whether Shanghai has already entered a new phase in this vital aspect of its economic life. As we can measure it, this huge city is a world anomaly in the pattern and mechanics of its food supply, but as China is increasingly drawn into the world economic pattern, with Shanghai leading and accelerating the change as before, this anomaly, like most of its others, will disappear.

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1930's, or about half of the large-scale mechanized soap factories in China. They drew 90 per cent of their raw materials from domestic sources. Lye (potash) was obtainable from plants in Shanghai. Vegetable tallow and vegetable oils (most importantly, cotton, peanut, rape seed, sesamum seed, and castor) came to the city via the Yangtze system from the major producing areas of central China.[31] The fruit of the tallow tree is gathered in central China in October and the oil pressed out during the winter, but it is not marketed in Hankow and sent to Shanghai until the spring rise of the waterways leading to Hankow makes easy navigation possible. A dry spring makes the market soar in both Hankow and Shanghai.[32]

The average Shanghai price before the war was nevertheless substantially below that of foreign vegetable oil imports (despite the production of coconut oil in southeast Asia). Vegetable wax from central China also largely replaced foreign imports of paraffin wax after 1930, when the *likin* (internal customs tax) was abolished by the Kuomintang government. The cheapness of domestic tallow, oils, and wax in Shanghai relative to seaborne foreign imports was clearly related to the use of inland water transport in bringing these products to the city. The fact that 80 per cent of Shanghai's soap production in the early 1930's was marketed outside Kiangsu also suggests that the city's water connections with its hinterland were basic in locating the industry there. Only 10 per cent of the Shanghai soap industry's raw materials were imported, largely coconut and olive oils for making especially high-quality soap for the domestic market.[33]

By contrast, the Shanghai match industry was almost entirely dependent on overseas sources for its raw materials. It imported all of its sulphur (largely from Japan), all of its paper and cardboard (from Sweden), and all of its match-making machinery (from Japan). Most of its phosphorous was also imported, but some was produced locally from animal bones. Ample sulphuric acid was produced in Shanghai. For this product of such high unit-value by weight, raw materials to which so much value was added by manufacture could economically be imported, and the finished matches were marketed in every province of China.[34] Shanghai was never-

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505 not only depended heavily on seaborne supplies, but which had a
439 large and important transit trade.

As if in a commentary on the nature of the city's food supply,
433 food, in particular rice, has remained cheap and plentiful throughout the period of Communist control. Order was quickly restored in the delta in 1949, and the flow of low-cost food to the city was maintained despite a nearly universal food shortage or famine in the rest of China during the winter of 1949–50, and despite the Nationalist blockade, which prevented any substantial amounts of food from arriving in the city by sea. The Communist Government has apparently been able to solve, at least to a degree, the problem of local rice supply during the planting season and at festival periods, by controlling prices and arranging for large government purchases which are released on the market at stable prices whenever the situation requires. There is no suggestion that local food supplies are not entirely adequate to meet the city's demands under such a
[162] system of management. While no official figures have been released, it is unlikely that Shanghai's population is substantially less than the four millions it had reached in 1936; it may have risen closer to the five million mark, since the great influx of people after the Japanese war has not apparently been balanced by the still limited exodus.*

288 Nationalist bombings during the winter of 1949–50 did only minor industrial damage, and came to an end by late 1950 with the arrival of jet defense planes from the Soviet Union and the Nationalist loss of the Chusan Islands, which had been the major base for the bombings of the city. A continuing deterrent to industrial recovery however has been the still inadequate domestic production of raw cotton. Several cotton textile factories in the city were obliged to shut down entirely during 1949 and 1950 for lack of raw cotton, and while all or most of these have subsequently reopened, not enough cotton is coming in to maintain peak production.†

poor position, and its economy has in the past been closely geared with that of the West.

* See above, p. 21. Foreign and Chinese press reports still consistently refer to Shanghai as the fourth largest city in the world, with a population given variously as 5 or 6 million.

† *Hsin-Hua Yüeh-Pao* for November 1951, 130–131, reports that while production